

WHAT IS CLAIMED IS:

1. A membrane/electrode assembly in which at least one of an anodic electrode for oxidizing a fuel and a cathodic electrode for reducing oxygen has a catalytic material comprising a catalytic component and a catalyst carrier for supporting said catalytic component, wherein the catalyst carrier contains atoms that can be able to form covalent bonds with said catalytic component and a proton-conductive material and in which a proton-conductive electrolyte membrane is formed between said anodic electrode and said cathodic electrode.

2. A fuel cell having an anodic electrode and a cathodic electrode formed via an electrolyte membrane, said fuel cell further comprising the membrane/electrode assembly defined in claim 1.

3. A fuel cell comprising an anodic electrode for oxidizing a liquid fuel, a cathodic electrode for reducing oxygen, and an electrolyte membrane formed between said anodic electrode and said cathodic electrode; wherein either said anodic electrode or cathodic electrode or both have a catalytic material in which a catalyst carrier for supporting a catalytic component and said catalytic component are contained and in which said catalyst carrier contains atoms that can be able to form covalent bonds with said catalytic component.

4. A fuel cell comprising an anodic electrode for oxidizing a liquid fuel, a cathodic electrode for reducing oxygen, and an electrolyte membrane formed between said anodic electrode and said cathodic electrode; wherein at least one of said anodic electrode and the cathodic electrode has a catalytic material which contains a carbon-containing catalyst carrier and a catalytic component, said catalyst carrier containing at least one atom selected from the group of nitrogen, sulfur, oxygen, and phosphorus atoms.